

SECTION 07714

GUTTERS AND DOWNSPOUTS

LANL MASTER CONSTRUCTION SPECIFICATION

When editing to suit project, author shall add job specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the LEM discipline POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

This section includes shop or site fabricated metal rainwater gutters and downspouts normally associated with low rise building work. Downspouts are sometimes referred to as rainwater leaders or rainwater conductors.

This section includes performance, proprietary, and descriptive type specifications. Edit to avoid conflicting requirements.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-finished galvanized steel gutters and downspouts.
- B. Fastening.
- C. [Precast concrete splash pads] [rip rap] at downspout outflows.

1.2 SYSTEM DESCRIPTION

- A. Rainwater collection and disposal system externally mounted and drained.

1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals
 - 1. Catalog Data: Manufacturer's product specifications, standard details, installation instructions and general recommendations, as applicable to materials and finishes for each component and their complete installation.
 - 2. Shop Drawings: Complete shop drawings and erection details showing methods of erection, sections and details, flashings and all other accessories. Interface with all related work of other trades and proposed identification of component parts and finishes.

3. Samples: One cross sectional sample of guttering and downspout, including clips, fasteners as applicable to project. Submit two color chip samples in color selected.
4. Warranty: As specified herein.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01600, Materials and Equipment.
- B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope materials and components to ensure drainage.
- C. Prevent contact with materials causing discoloration or staining.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply gutter or downspout materials during inclement weather.
- B. Do not apply gutter or downspout materials to damp or frozen surfaces.

1.7 QUALITY ASSURANCE

- A. Perform Work per SMACNA Architectural Sheet Metal Manual and NRCA Roofing and Waterproofing Manual.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 WARRANTY

- A. Furnish [5] [] year manufacturer warranty for metal components against corrosion with an additional installers warranty for [5] years against fastener failure, water penetration at joints or failure to drain.

PART 2 PRODUCTS

2.10 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Comply with Section 01630, Product Options and Substitutions.

In this article, list manufacturers acceptable for this Project.

- B. Manufacturers:

1. [] Model [].

C. Product Description:

1. Gutters, Downspouts, Scupperheads and Canales]: Sheet metal, [rectangular] [square] style profile][profile as indicated on Drawings.]

2.11 SHEET METAL MATERIALS

A. Pre-Finished Galvanized Steel Sheet: ASTM A755 coil coated.

1. Base Metal: ASTM A653, zinc coating.
2. Exposed Finish: Silicone polyester or acrylic or electrolytic powder coating.

***** [OR] *****

3. Exposed Finish: Minimum three coat fluoropolymer coating with minimum 70 percent polyvinylidene fluoride resin.

***** [OR] *****

4. Unexposed Finish: Manufacturer's standard.

***** [OR] *****

B. Galvalume Steel Sheet: ASTM A792, aluminum-zinc alloy coating.

***** [OR] *****

C. Pre-Finished Galvalume Steel Sheet: ASTM A755 coil coated.

1. Base Metal: ASTM A792, aluminum-zinc alloy coating.
2. Exposed Finish: Silicone polyester or acrylic or electrolytic powder coating.

***** [OR] *****

3. Exposed Finish: Minimum three coat fluoropolymer coating with minimum 70 percent polyvinylidene fluoride resin.

4. Unexposed Finish: Manufacturer's standard.

5. Splash Pads: Precast concrete type, with standard profile indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

6. Downspout [Boots] [Shoes]: Steel as previously described.

2.12 FABRICATION

Design gutters and downspouts per LANL Engineering Manual, Mechanical Chapter (plumbing), for rainfall rate specified. Size gutters sloped at 1/8 inch/foot to receive 2 times volume of water.

- A. Form sections as indicated in Drawings, accurate in size, square, and free from distortion or defects.
- B. Fabricate trim, flashing, and other metal components from same material as metal gutter sections. Provide exposed metal surfaces with same finish as exposed face of metal roof panels.
- C. Fabricate strap ties of compatible material as gutters, to interlock with gutter.
- D. Fabricate connector/expansion clips of same material as gutter that interlock with gutter by mechanical fastener or welding.
- E. Form gutter and downspout sections in longest practical lengths or in single length sheets where possible.
 - 1. Gutters: Rectilinear in cross section unless otherwise indicated.
- F. Hem exposed edges on 1/2-inch miter.

Due to high coefficient of expansion, metal should not be lock seamed where thermal induced movement of metal is restrained.

- G. Provide expansion joints (slip joints) on gutters exceeding 50 feet in length
- H. Roof side gutter flange to extend continuously up fascia or wall and terminate under drip edge or gravel stop. Where this is not possible, flange to be lapped with flat sheet metal that begins under edge of roof sheathing or drip edge and laps over the sloped rear gutter flange. The rear gutter flange shall be bedded, when applied on plumb fascias, in silicone sealant.
- I. Fabricate corners with 18 inch long legs. Weld mitered seam for rigidity, seal with sealant.
- J. Install gutter connections per manufacturer's warranty requirements. Connections may be:
 - 1. Soldered.
 - 2. [Riveted] [Screwed] with sealant.
 - 3. Profile Connectors: [Riveted] [Screwed] with sealant.
- K. Downspout collars on bottom of gutter trough shall be [soldered] [riveted] [screwed] and sealed with sealant.

2.13 ACCESSORIES

- A. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Anchoring Devices: [Per SMACNA requirements.] [Type recommended by fabricator.]

2. Gutter Supports: [Brackets.] [Straps.] [Screws and ferrules.]
3. Downspout Supports: [Brackets.] [Straps.]
4. Fabricate gutter and downspout accessories; seal watertight.

B. Fasteners: Screws

1. For installations on wood framed structures through screwing is required with 8-inch long galvanized or anodized screws within ferrules. Fastening to be at rafter tail locations with screws to penetrate both fascia and rafter tail.
2. For fastening directly through gutter cross section, use screws of suitable length made of compatible material and finish as gutters and downspouts, with neoprene gaskets.

Select protective backing paint or protective back coating appropriate to flashing metal selected and compatible with adjacent materials. These coatings are intended to prevent electrolytic reaction with other materials in contact with flashing metal.

- C. Primer: [Zinc molybdate] [Galvanized iron] [Iron oxide linseed oil] type.
- D. Protective Backing Paint: Zinc molybdate alkyd.
- E. Solder: ASTM B32, 50/50 type.

2.14 FACTORY FINISHING

- A. Class I Natural Anodized Finish: AAMA 611, clear anodic coating not less than 0.7 mils thick.

***** [OR] *****

- B. Class II Natural Anodized Finish: AAMA 611, clear anodic coating not less than 0.4 mils thick.

***** [OR] *****

- C. Class I Color Anodized Finish: AAMA 611, integrally colored anodic coating not less than 0.7 mils thick.

***** [OR] *****

- D. Class II Color Anodized Finish: AAMA 611, integrally colored anodic coating not less than 0.4 mils thick.

***** [OR] *****

Paragraphs "E" and "F" below are for pre-finished steel sheet.

- E. PVDF (polyvinylidene fluoride) Coating: Multiple coat, thermally cured, fluoropolymer system conforming to [AAMA 2604] [AAMA 2605].

***** [OR] *****

- F. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer when pre-finished materials are specified.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify surfaces are ready to receive gutters and downspouts.

3.2 PREPARATION

- A. Paint concealed [metal] [wood] surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil and bed with silicone sealant.

3.3 INSTALLATION

- A. Roll Formed Gutter: Join lengths with formed seams [sealed] [soldered] [mechanically fastened] watertight. Flash and seal gutters to downspouts and accessories.
- B. Install per manufacturer's instructions. If there is a conflict between Contract documents and manufacturer's instructions, comply with most stringent requirements.
- C. Slope gutters 1/8 inch per foot minimum, 1/4 inch per foot preferred.

Delete the following paragraph when no soldered sheet metal is required.

- D. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- E. Connect downspouts to [boots] or [shoes] at 8 inches above grade, seal connection watertight.
- F. Install gutters 3/4 inches below slope of roof at outside edge.
- G. Attach gutters to structure by both strap ties and by direct fastening through profile. Locate fasteners and strap ties a maximum of 24 inches on center.
- H. Locate downspouts per Drawings. [or as field directed by LANL Construction Inspector. (for retrofit work)]
- I. Provide "open sided" downspouts to prevent gutter ice build-up.
- J. Strap fasten downspouts at maximum 30 inches on center.

- K. Do not locate downspouts with outflow creating an icing problem on pedestrian walkways.
- L. Set splash pans under downspouts when application puts outflow onto a flat roof below. Secure in place.
- M. Set splash pads under downspouts at grade and secure in place with soil or pins. Grade out flow soils to drainage area.
- N. Provide rip rap at downspout outflow, 6 inch nominal diameter stones secured in place with 10 gage galvanized wire (2 inch x 2 inch x 2 foot long) where adjacent grade of soil exceeds 5 percent, or where volume and velocity of outflow will cause erosion.

END OF SECTION